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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,925	03/27/2001	Mikhail Godkin	2102483-906101	3954

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EXAMINER

JONES, JUDSON

ART UNIT PAPER NUMBER

2834

DATE MAILED: 05/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/817,925

Applicant(s)

GODKIN, MIKHAIL

Examiner

Judson H. Jones

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-10, 12-14, 17-20 and 27-31 is/are allowed.
- 6) ☒ Claim(s) 1-7, 11, 15, 16 and 21-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The new drawings were received on 12/23/2003. These drawings are accepted.

Claim Rejections - 35 USC § 101

The 35 USC 101 rejections of claim 18 and 20 are withdrawn in view of Applicant's drawings filed 12/23/2003 and in view of his explanation of how the word "cavity" is used in the claims and specification.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4, 15, 21, 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Helms 3,619,673 (cited by Applicant). Helms discloses a voice coil actuator having a core 20, a permanent magnet 36, 38, a moving coil 50 and a compensating coil 70 as shown in figure 2 wherein the compensating coil interacts with the moving coil as a function of the position of the moving coil as described in column 4 lines 30-54. The interaction here is from magnetic flux and the interaction as a function of position refers to the change in location of the flux provided by the compensating coil and the flux of the moving coil and also to the slight changes in flux magnitude which will exist because the compensating coil winding is not perfectly uniform.

In regard to claims 3, 4 and 24, see Helms figure 2.

In regard to claims 15 and 21, see Helms figure 1.

In regard to claim 23, the claim language includes "magneto-motive force ... of a magnitude which is a function of positions of the movable core." In its broadest

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interpretation, a mathematical function describes a situation where an element in a set A has a corresponding element in set B. In this situation, set A is the position of the movable core from a zero point to a finite end point while set B is the value of the flux produced by a current which varies randomly about the average value of current through wires of approximately the same length and having approximately the same resistance when fed by a fixed voltage.

Claim Rejections - 35 USC § 103

Claims 5, 6, 22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helms in view of Gillott et al. 3,863,082 (cited by Applicant). Helms discloses the actuator but does not disclose the permanent magnet positioned with respect to the core to define a cavity where the compensating coil is positioned. However Gillott et al. discloses such a cavity as shown in figure 1. While Gillott et al. controls his compensating coil based on the time dependent pressure build-up in a patient's lungs as described in column 7 lines 51-62, the purpose of both compensating coils is the same as described in Helms column 4 lines 20-29 and in Gillott et al. column 7 lines 16-26. (Helms refers to a bucking coil which reduces the net flux in leg 28 and takes the leg out of saturation, and Gillott et al. refers to an auxiliary coil where the direction and magnitude of current flow can be varied to add flux to take the core out of saturation.) Since Gillott et al. and Helms are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a cavity for a compensating coil instead of having the compensating coil wrapped around the length of the core in order to protect the compensating coil from damage and thus increase the reliability of the device.

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In regard to claim 6, see Gillott et al. figure 1.

In regard to claim 22, see Gillott et al. figure 3.

In regard to claim 26, see Helms figure 1.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helms as modified by Gillott et al. as applied to claim 5 above, and further in view of Sim 5,177,383 (cited by Applicant). Helms as modified by Gillott et al. discloses the actuator but does not disclose compensating coils on both ends of the core. However Sim teaches this idea in column 3 lines 32-46. Since Sim and Helms as modified by Gillott et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have placed compensating coils in cavities at both ends of the permanent magnets in order to improve the flux compensation of the actuator and thus improve the efficiency of the motor.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helms in view of Morcos et al. 5,677,963. Helms discloses the actuator but does not disclose a position sensor responsive to the position of the moving coil. However Morcos et al. teaches the use of position sensors in column 5 lines 51-57. Since Morcos et al. and Helms are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a position sensor in the actuator of Helms in order to make the positioning of the movable member more precise and thereby increase the usefulness of the actuator.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helms in view of Yuan 5,777,403. Helms discloses the actuator but does not disclose the actuator being open-ended. However Yuan teaches that open-ended actuators are known in the art

in column 1 lines 34-48. Yuan also teaches a problem of movable member support with open-ended actuators in column 1 lines 49-65. Since Yuan and Helms are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have made an open-ended variant of the actuator of Helms for situations where a closed-ended actuator could not be used, thus increasing the usefulness of the actuator.

Allowable Subject Matter

Claims 8-10, 12-14, 17-20 and 27-31 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose or teach an actuator having both a compensating coil positioned around a core and a compensating coil in a cavity formed between the end of a permanent magnet and the housing as recited in claims 8, 10, 12, 17, 27 and 29. Helms teaches a compensating coil positioned around a core, Gillott et al. teaches a compensating coil in a cavity between the end of a permanent magnet and the housing and Sim teaches using two identical compensating coils. No reason has been found for combining the elements of the prior art together to produce the claimed invention.

Applicant's arguments filed 12/23/2002 have been fully considered but they are not persuasive. Applicant argues that Helms teaches a "brush type" device that is fundamentally different from the claimed invention and that Helms does not meet the limitation of "a compensating coil positioned to interact with the moving coil, wherein a magneto-motive force in the compensating coil is controlled as a function of a position of the moving coil." In its broadest interpretation, this means that the force of the

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compensating coil changes in some way when the moving coil changes position. In Helms, the location of the force produced by the compensating coil changes. In claim 23 the magnitude of the magneto-motive force is specified as an additional limitation. No proportional relationship is required between the position of the moving coil and the force produced by the compensating coil. The only function claimed is to alter the magnetic flux in the air gap. In Helms, the magnitude of the magneto-motive force and therefore the magnetic flux in the air gap changes slightly and randomly as the position of the movable coil changes. In order to define over Helms, Applicant needs to claim that change in the position of the moving coil leads to a corresponding change in the magnitude of the force.

In regard to combining Gillott et al. with Helms, Gillott et al. is concerned with avoiding saturation of the core while Helms is concerned with avoiding saturation of the central leg of the core. The common goal of reducing saturation in the core makes Helms and Gillott et al. analogous art. The proposed use of the Gillott et al. device of controlling the time dependent pressure build-up in a patient's lungs is not particularly relevant to whether Helms and Gillott et al. are analogous art. While it is true that Gillott et al. is not concerned with control based on moving coil position, that feature is provided by Helms.

In regard to the Sim reference, Sim does disclose "shorted coils." These shorted coils have an influence on the magneto-motive force provided by the moving coil as described in column 3 line 55 to column 4 line 2. In the broadest sense of the term "compensate," the shorted coils are compensating coils.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JHJ 
May 9, 2003

